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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

Aylus Networks, Inc., a Delaware corporation,

Plaintiff,

vs.

Apple, Inc., a California corporation

Defendant.

CASE NO. 3:13-cv-4700-EMC

DECLARATION OF DR. DANIEL J. WIGDOR, PH.D IN SUPPORT OF AYLUS' REPLY CLAIM CONSTRUCTION BRIEF

DECLARATION OF DANIEL J. WIGDOR

I, Daniel J. Wigdor, declare as follows:

I. Introduction

1. I have been asked by Aylus Networks, Inc. ("Aylus") to provide my opinions concerning the meaning of certain claims of U.S. Patent No. RE44,412 (the "'412 patent"). Aylus has also asked me to evaluate the factual basis for Apple, Inc.'s ("Apple's") proposed claim constructions related to Universal Plug and Play (UPnP) and IP Multimedia Subsystem (IMS).

2. I am being paid my customary rate of $450 per hour for the time I spend on this matter. My compensation is not based on the opinions I reach or the outcome of the litigation.

II. Qualifications

3. My *curriculum vitae*, which includes a record of my professional qualifications, including a list of publications, awards, professional activities, patents, and recent testimony is attached as **Exhibit 6**. Relevant highlights are summarized below.

4. I have a Ph.D. in Computer Science from the University of Toronto. I hold the following two degrees from the University of Toronto, spanning the years 1998 to 2008:

- Ph.D in Computer Science, 2008, Thesis: The Design of Table Centric, Interactive Spaces;
- M.Sc. in Computer Science, 2004;
- Hon. B.Sc. with a specialization in human computer interaction, 2002.

5. I am presently an Assistant Professor in the Department of Computer Science & Department of Mathematical and Computational Sciences at the University of Toronto. I am also a co-director of the Dynamic Graphics Project. I have also held the title of Associate of the School of Engineering and Applied Sciences at Harvard University where I participated in and provided

supervision of research projects. I have received numerous awards including the "Inventor of the Year" award from the University of Toronto and the "Early Researcher Award" from the Ontario Ministry of Research and Innovation.

6. Previously, I was a Researcher at Microsoft Research and a User Experience Architect at Microsoft Corp. While in these roles I supervised research projects related to computer hardware and software.

7. Based on my work in both computer hardware and software engineering, I have personal knowledge of the state of the art in multimedia streaming in the mid-2000s. I know, with reasonable certainty, what a person of ordinary skill in the art in the mid-2000s was and how that person would understand the words used in the '412 patent. In this regard, based upon my knowledge and experience and my review of the '412 patent, it is my opinion that a person of ordinary skill in the art at the time of the '412 patent would have had at least a bachelor's degree in computer science or electrical/computer engineering plus at least two years of experience either working or teaching in the field of network architecture for delivering content from a media server to a media renderer.

III. Materials Reviewed

8. To prepare for this declaration, I reviewed, among other materials, the '412 patent, which I understand is attached to the Declaration of William O. Cooper as Exhibit 1, as well as the prosecution history for the '412 patent and U.S. Patent No. 7,724,753 (the "'753 patent") from which the '412 patent was reissued. I have also reviewed the '753 patent's prosecution history. I also reviewed UPnP and IMS documents submitted by Apple in support of its proposed constructions. I also reviewed technical documents related to the use of "media server," "media renderer," and "control point" in contexts unrelated to UPnP. I also reviewed literature related to the use of IMS networks and non-IMS networks such as the Public Switched Telephone Network.

IV. Universal Plug and Play (UPnP)

9. The '412 patent describes UPnP as one of at least four possible embodiments for one element of the invention. UPnP is described in the patent as one possible protocol among many that allows the UE to interact with the MS or the MR.

10. In October 1999, Microsoft orchestrated the creation of the UPnP Forum. The UPnP Forum is not a standard setting organization nor does it bind members to the specifications it establishes. Instead, the UPnP Forum is a select group of companies that independently agree to develop certain universal protocols for use.

11. Attached to this declaration as **Exhibit 7** is a true and accurate copy of "UPnP Architecture:0.83."

12. Attached to this declaration as **Exhibit 8** is a true and accurate copy of "UPnP ConnectionManager."

13. UPnP's architecture, as understood by the specifications available on the UPnP Forum website, is limited to a media render, media server, and control point on a local network. UPnP never discusses a control point proxy. Nor did the UPnP specifications contemplate placing the CP in a wide area network. Instead, UPnP's architecture, as contemplated by the specifications published by the UPnP forum is a local network. See e.g. Ex. 7 (UPnP Architecture) at 9. ("MediaServers and MediaRenderers in the home network are discovered.") (emphasis added).

14. When UPnP components interact with non-UPnP components fundamental UPnP functionality may not be utilized. Ex. 8 (UPnP ConnectionManager) at 14-15 ("In such cases a control point can only call PrepareForConnection and ConnectionComplete actions on the first device. . . . In case the connecting device is not a UPnP device . . . the whole PeerConnectionManager is left blank.").

15. The UPnP specifications also make clear that the UPnP "components" can interact with each other using "the standard UPnP control protocols (e.g. SOAP over HTTP) or using some private communication mechanism." Ex. 7 (UPnP Architecture) at 6.

V. IP Multimedia Subsystem (IMS) Networks and Circuit Switched (CS) Networks

16. IP Multimedia Subsystem (IMS) in an architecture for delivering multimedia content over a network.

17. Attached to this declaration as **Exhibit 14** is a true and accurate copy of Jean-Phillippe Joseph, PSTN Services Migration to IMS: Are SPs finally reaching the tipping point for large scale migrations?" (2010).

18. A Circuit Switched (CS) network is a non-IMS network. See Ex. 14 (PSTN Services Migration to IMS) at 1.

19. The '412 patent's specification references CS networks generally and Public Switched Telephone Networks (PSTN) specifically several times in its discussion of non-IMS embodiments. Ex. 1 ('412 patent) at 1:50; id. at 3:40; id. at 2:44-60; id. at 15:50-55; id. at 13:43-46.

20. Apple's proposed construction of "handset" is "a mobile phone capable of making and receiving calls over the Public Switched Telephone Network."Apple Resp. Br. at 23.

VI. Claim Construction Law

21. I understand that the words of a claim are generally given their ordinary and customary meaning, which is the meaning that the term would have to a person of ordinary skill in the art to which the patent pertains at the time of the invention. I understand that a person of ordinary skill in the relevant art is not an expert in the technical field at issue, but has normal skills and knowledge in that technical field.

22. I also understand that claim construction begins with the language of the asserted claims. I understand that the claims must be interpreted in light of the patent specification but that limitations must not be imported into the claims from the specification. I also understand that the specification's preferred embodiment cannot limit the scope of the claims.

23. I understand that a patent's specification and prosecution history are referred to as "intrinsic evidence." I also understand that only evidence considered by the patent examiner may

be considered intrinsic evidence. I understand that only if, after reviewing the intrinsic evidence, the meaning is unclear, may extrinsic evidence inform the construction of the claim terms.

VII. Claim Constructions

A. "negotiate media content delivery between the MS and the MR" Does Not Require the Use of UPnP Architecture

24. Claims 1, 2, 4, 20, 21, and 27 of the '412 patent recite, in part, "negotiate media content delivery between the MS and the MR. Ex. 1 ('412 patent) at 24:50; id. at 24:59-60; id. at 24:64-65; id. at 25:5-6; id. at 25:59-60; id. at 26:9-10; id. at 26:14-15; id. at 26:23-24; id. at 26:37-39. In my opinion, "negotiate media content delivery between the MS and the MR" in the context of the '412 patent means "coordinate transport of audiovisual content from the MS to the MR."

25. Attached to this declaration as **Exhibit 9** is a true and accurate copy of Singh, et al., "MP3 streaming over Bluetooth to multiple users" (Oct. 29, 2005).

26. Attached to this declaration as **Exhibit 10** is a true and accurate copy of Okura, et. al., "The Influence of Segmentation Mismatch on Quality of Audio-Video Transmission by Bluetooth" (August 8, 2004).

27. Attached to this declaration as **Exhibit 11** is a true and accurate copy of Lee, et al., "Autonomous Management of Clustered Server Systems Using JINI" (Jan. 1, 2004).

28. Attached to this declaration as **Exhibit 12** is a true and accurate copy of Microsoft Inc., "IP-DLC Link Service Concepts and Terminology" available at http://msdn.microsoft.com/en-us/library/ee252937(v=bts.10).aspx (Oct. 16, 2004).

29. Attached to this declaration as **Exhibit 13** is a true and accurate copy of Bulterman, et al. "Ambulant: A Fast Multi-platform Open Source SMIL Player" (Oct. 16, 2004).

30. Media server (MS), media renderer (MR), and control point (CP) have long been used independently of UPnP's architecture and have an established meaning to those skilled in the pertinent art.

31. For instance, in a technical paper entitled "MP3 streaming over Bluetooth to multiple users" from October 2005, the authors discuss streaming audio files from "the Media server" using Bluetooth. Ex. 9 (MP3 streaming over Bluetooth to multiple users) at 3. "Media server" is also used in an August 2004 paper on segmentation mismatch of audio-video transmissions via Bluetooth. Ex. 10 (The Influence of Segmentation Mismatch on Quality of Audio-Video Transmission by Bluetooh) at 1, 2, 4.

32. Another technical paper, this time discussing Jini protocols, an alternative to UPnP, also references "media server" without ever mentioning UPnP. Ex. 11 (Autonomous Management of Clustered Server Systems Using JINI) at 7.

33. In 2004, even Microsoft, the primary promoter of UPnP, used "control point" in a context totally unconnected to UPnP to describe network discovery and coordination. Ex. 12 (IP-DLC Link Service Concepts and Terminology).

34. The same is true for media renderer. In October 2004, developers of an open source player for Synchronized Multimedia Integration Language files used "media renderer" to refer to the method of displaying media content to the user. Their white paper does not reference UPnP. Ex. 13 (Ambulant: A Fast Multi-Platform Open Source SMIL Player) at 3.

35. Indeed based on these references, along with many others not discussed here, media server (MS), media renderer (MR), and control point (CP) were well known independent of UPnP and this would have been apparent to one skilled in the pertinent art.

36. More importantly, the specification of the '412 patent makes clear that UPnP is only one element of the greater invention. UPnP's use is aimed at device discovery and announcement. For example the specification states:

- "involves the PA client discovering an associated device via UPnP Discovery mechanisms." Ex. 1 ('412 patent) at 21:8-9.
- "The UE may discover local devices that can act as an MS or an MR by using Universal Plug and Play (UPnP) protocols." Ex. 1 ('412 patent) at 6:36-38.

- The MS and/or MR may announce their presence to the UE using at least one of UPnP protocols, Jini technology, RFID, and Bluetooth.Ex. 1 ('412 patent) at 6:38-40.
- "Home and personal networking systems increasingly feature the ability to discover new devices using so-called discovery protocols. One such example is the Universal Plug and Play (UPnP) protocol that allows the dynamic discovery of devices." Ex. 1 ('412 patent) at 9:58-62.

37. The word "negotiation" is not a term of art in the UPnP literature.

38. Thus, in my opinion, one skilled in the art would know that "media renderer," "media server," "control point," and "negotiation" all existed independently from UPnP and would not require an understanding of UPnP's architecture to comprehend. It is also my opinion that any reference by the '412 patent to UPnP refers only to discovery and announcement of networked devices. It is my opinion that "negotiate media content between the MS and the MR" means "coordinate transport of audiovisual content from the MS to the MR."

B. "serving node" as it is Used in the '412 Patent Does Not Mandate the Use of an IMS Session

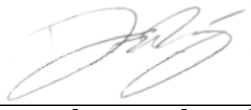
39. Claims 1, 15, 20, 27, and 32 recite in part the term "serving node." Ex. 1 ('412 patent at 24:40; id. at 25:14; id. at 25:26-27; id. at 25:42; id. at 25:66; id. at 26:35-36; id. at 26:51; id. at 27:2). In my opinion, "serving node" as used in the context of the '412 patent means "a serving element in the wide area network."

40. While the '412 patent does frequently reference concepts derived from IMS, the "serving node" does not require the use of an IMS session.

41. One skilled in the art would note that the '412 patent specification frequently references and describes functionality for circuit-switched transport modes such as Public Switched Telephone Network (PSTN). As noted above, the PSTN is not an IMS network.

42. It is my opinion that the term "serving node," in the context of the '412 patent means "a serving element in the wide area network" and does not mandate the use of an IMS network or an IMS session.

I declare under penalty of perjury under the laws of the State of California that the foregoing declaration is true and accurate. This declaration was executed in Maui, Hawaii on October 2, 2014.



Daniel J. Wigdor, Ph.D.